



# SmartScope CNC

## Large-Travel Multisensor Metrology System

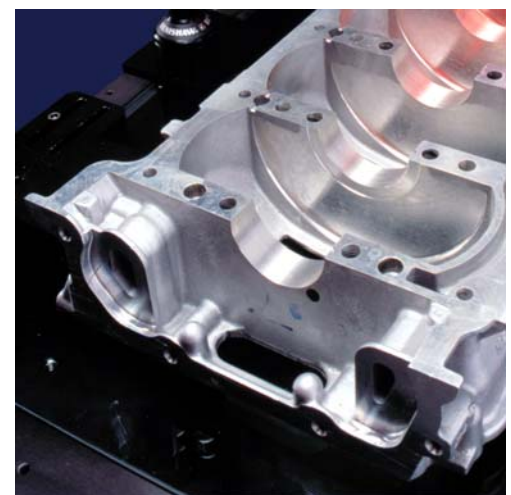


SmartScope® CNC 670 is an innovative multi-purpose measurement system with a large XYZ measuring range. Its generous measurement travel makes it suitable for measuring circuit boards and other large parts such as flat panel displays (FPDs), and masks; or fixtured arrays of smaller parts/assemblies, while its mechanical design provides for a small system footprint.

- **Staging.** SmartScope CNC 670 is a moving bridge machine where the instrument head moves in the X-axis across a granite bridge while the bridge moves in parallel tracks in the Y-axis. The granite bridge provides excellent metrological stability across the entire X-axis, while dual Y-axis scales assure high accuracy and repeatability. The bridge is mounted on a substantial granite base for stability. The DC motor-driven drives provide XY travel of 200 mm/sec (or faster). The measured part remains stationary, while XYZ sensor translations are performed rapidly and accurately.
- **Optics.** This CNC system has large-magnification-range, precision zoom optics. The patented 12:1 AccuCentric® zoom lens provides a large measurement range and calibrates itself automatically after every magnification change, for consistent accuracy throughout its range and over its entire lifetime.
- **Illumination.** All-LED illumination, including green back light, white coaxial TTL surface light, and OGP patented programmable SmartRing™ light, address most lighting needs with ease.
- **Metrology Software.** Measure-X® metrology software provides extensive functions and logical controls. Optional MeasureMind® 3D MultiSensor software provides full 3D capability with full sensor and rotary integration. SmartScope CNC 670 is easily programmed for fully automatic operation.
- **Multisensor Capability.** In addition to excellent video measurement performance, CNC 670, with an optional laser and/or touch probe, provides the advantages of comprehensive multisensor measurements.

	Travel	mm
CNC 670	X axis	650
	Y axis	670
	Z axis	200
Extended Z (option)	Z axis	300
Extended Z (option)	Z axis	400

300/400 mm Extended Z shown



# SmartScope CNC Features & Specifications

- Standard
- Optional

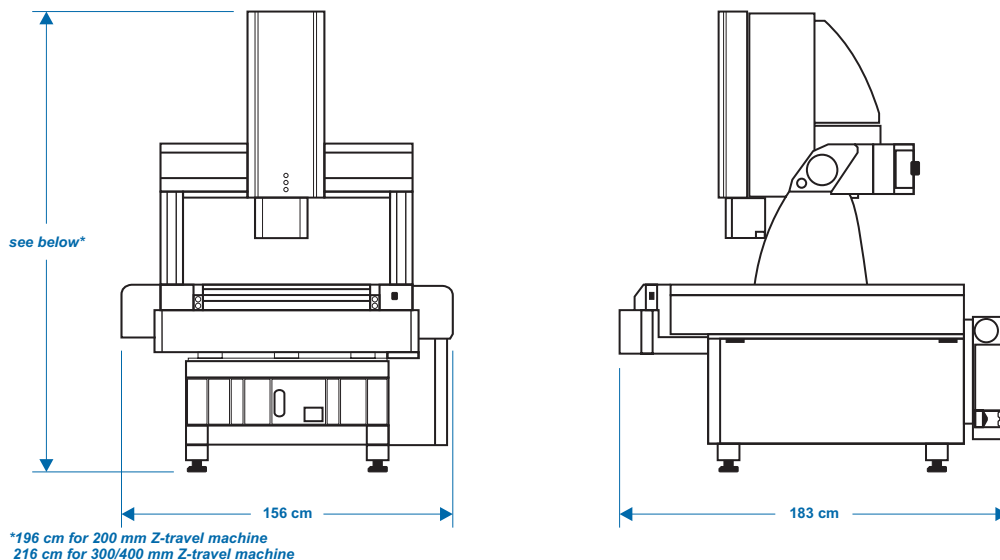
- **Stage travel (XYZ):** 650 x 670 x 200 mm
  - **Extended Z axis:** 300 mm, 400 mm
  - **Measurement unit dimensions (LWH):** 183 x 156 x 196 cm (200 mm Z travel), 183 x 156 x 216 cm (300/400 mm Z travel)
  - **Measurement unit weight:** 2145 kg
  - **Crated dimensions (LWH), crated weight:** 211 x 219 x 234 cm, 2259 kg
  - **XYZ scale resolution:** 0.5  $\mu\text{m}$
  - **0.1  $\mu\text{m}$**
  - **Motor drives:** DC servo with joystick control (X,Y,Z, zoom)
  - **XY stage velocity:** 200 mm/sec nominal, higher upon request
  - **Load capacity:** 130 kg
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- **Zoom lens:** Patented<sup>†</sup> 12:1 AccuCentric<sup>®</sup> auto-calibrating with up to 10 calibrated positions
  - **Optical accessories:** 0.5x, 0.75x, 1.5x, and 2.0x lens attachments; LED grid projector; 2.5x replacement lens; laser pointer (included with TTL laser)
  - **Camera:** 1/2" format high resolution color CCD
  - **Illumination:** Green LED substage, white coaxial TTL surface, patented<sup>††</sup> 8 sector/8 ring SmartRing<sup>™</sup> white LED illuminator
  - **Image processing:** 256 level grayscale processing with 10:1 sub-pixel resolution
  - **Multisensor options:** Touch probe and change rack, on-axis TTL laser, off-axis DRS<sup>™</sup> laser, Feather Probe<sup>™</sup>, Rainbow Probe<sup>™</sup> (contact OGP for possible combinations of sensors)
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- **Power requirements:** 115/230 vac, 50/60 Hz, 1  $\phi$ , 850 W
  - **Rated environment:** Temperature between 18 and 22° C, stable to  $\pm 1^\circ$  C; 30-80% humidity (non-condensing); vibration <0.001g below 15 Hz
  - **Operating environment, safe operation:** 15-30° C
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- **Computer:** Minimum configuration Dual Core processor @ 1.8 GHz, 1 GB RAM, 80 GB hard drive, 1.44 MB floppy drive, parallel, serial, and USB 2.0 ports, on board 10/100 LAN
  - **Operating system:** Microsoft<sup>®</sup> Windows<sup>™</sup> XP Professional
  - **Computer accessory package:** Single or dual 16:10 format flat panel LCD monitor(s), keyboard, three-button mouse (or user supplied)
  - **Metrology software:** Measure-X<sup>®</sup>
  - **MeasureMind<sup>®</sup> 3D MultiSensor**
  - **Software:** For use with Measure-X or MeasureMind 3D; MeasureFit<sup>®</sup> Plus, SmartReport<sup>®</sup> powered by QC-Calc<sup>™</sup>, Scan-X<sup>®</sup>, SmartTree<sup>™</sup>, SmartProfile<sup>®</sup>, SmartFit<sup>®</sup> 3D
  - **Software:** For use with MeasureMind 3D only; SmartScript<sup>®</sup>
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- Where L=measuring length in mm. Applies to thermally stable system in rated environment. All optical accuracy specifications at maximum zoom lens setting.
- **Z linear accuracy:**  $E_1 = (2.8 + 8L/1000) \mu\text{m}^1$
  - **Z linear accuracy:**  $E_1 = (2.5 + 8L/1000) \mu\text{m}^1$  (with optional 2.0x lens attachment/grid projector, on-axis TTL laser w/5.0x replacement lens, off-axis DRS-2000 laser, or TP-20/-200 touch probe)
  - **XY area accuracy:**  $E_2 = (2.0 + 5L/1000) \mu\text{m}^2$
  - **XYZ volumetric accuracy:**  $E_3 = (3.0 + 5L/1000) \mu\text{m}^{3,4,5}$  (requires MeasureMind 3D)
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- **Warranty:** One year
  - **Accessories:** Fixtures and calibration artifacts, rotary indexers

<sup>†</sup>Patent Number 5,389,774    <sup>††</sup>Patent Number 5,690,417

1) Z axis artifact: QVI step gage or master gage blocks.

2) XY axis artifact: QVI 25 intersection grid reticle in the standard measuring plane. The standard measuring plane is defined as a plane that is within 25 mm of the worktable surface.

3) Maximum rate of temperature change: 1° C/hour. 4) Maximum vertical gradient: 1° C/meter. 5) XYZ volumetric artifact: QVI linear linescale.



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